

CLAIMS

What is claimed is:

1. A method of operating a robot cleaner comprising:
cleaning with the robot cleaner;
detecting particulate with the robot cleaner; and
based on a detected particulate level, automatically adjusting the operation of the robot cleaner.
2. The method of claim 1, wherein particulate is detected with an optical detector.
3. The method of claim 2, wherein the optical detector is a photoelectric detector.
4. The method of claim 1, wherein particulate is detected with a vibration detector.
5. The method of claim 1, wherein particulate is detected with a sound detector.
6. The method of claim 1, wherein the operation of the robot cleaner is adjusted for a high level of detected particulate.
7. The method of claim 6, wherein the robot cleaner is slowed after detecting a high level of particulate.
8. The method of claim 6, wherein the robot cleaner is backed up to re-clean a location after detecting a high level of particulate.
9. The method of claim 6, wherein the robot cleaner produces more overlap in the cleaning after detecting a high level of particulate.
10. The method of claim 6, wherein the robot cleaner cleans cells of a subgrid and wherein the cell size is reduced after detecting a high level of particulate.

11. The method of claim 1, wherein the operation of the robot cleaner is adjusted for a low level of detected particulate.
12. The method of claim 11, wherein the robot cleaner is sped up after detecting a low level of particulate.
13. The method of claim 11, wherein the robot cleaner produces less overlap in the cleaning after detecting a low level of particulate.
14. The method of claim 11, wherein the robot cleaner cleans cells of a subgrid and wherein the cell size is increased after detecting a low level of particulate.
15. A robot cleaner comprising:
 - a cleaning unit on the robot cleaner;
 - a particulate detector; and
 - a processor adapted to monitor a particulate level detected by the particulate detector to determine whether to adjust the operation of robot cleaner, the processor adapted to adjust the operation of the robot cleaner when the determination to adjust the operation of the robot cleaner is made.
16. The robot cleaner of claim 15, wherein particulate is detected with an optical detector.
17. The robot cleaner of claim 17, wherein the optical detector is a photoelectric detector.
18. The robot cleaner of claim 15, wherein particulate is detected with a vibration detector.
19. The robot cleaner of claim 15, wherein particulate is detected with a sound detector.
20. The robot cleaner of claim 15, wherein the operation of the robot cleaner is adjusted for a high level of detected particulate.
21. The robot cleaner of claim 20, wherein the robot cleaner is slowed after detecting a high

level of particulate.

22. The robot cleaner of claim 20, wherein the robot cleaner is backed up to re-clean a location after detecting a high level of particulate.

23. The robot cleaner of claim 20, wherein the robot cleaner produces more overlap in the cleaning after detecting a high level of particulate.

24. The robot cleaner of claim 20, wherein the robot cleaner cleans cells of a subgrid and wherein the cell size is reduced after detecting a high level of particulate.

25. The robot cleaner of claim 15, wherein the operation of the robot cleaner is adjusted for a low level of detected particulate.

26. The robot cleaner of claim 25, wherein the robot cleaner is sped up after detecting a low level of particulate.

27. The robot cleaner of claim 25, wherein the robot cleaner produces less overlap in the cleaning after detecting a low level of particulate.

28. The robot cleaner of claim 25, wherein the robot cleaner cleans cells of a subgrid and wherein the cell size is increased after detecting a low level of particulate.

29. A method of operating a robot cleaner comprising:
cleaning regions of a room with a cleaning unit of the robot cleaner;
storing indications of the cleaned regions; and
when the robot cleaner is at one of the cleaned regions, automatically putting the cleaning unit of the robot cleaner in a reduced power mode to reduce battery power consumption.

30. The method of claim 29, wherein the indications of the cleaned regions are stored in an internal map.

31. The method of claim 30, wherein the internal map includes cells.
32. The method of claim 31, wherein the cells are marked as obstacle, cleaned or uncleaned.
33. The method of claim 30, wherein the robot cleaner has a first internal map and wherein the first internal map is used to produce a second internal map of lower resolution.
34. The method of claim 33, wherein the first internal map is a subgrid map and the second internal map is a room map.
35. The method of claim 29, wherein the reduced power mode includes turning off at least a portion of the cleaning unit.
36. The method of claim 35, wherein the reduced power mode includes turning off a vacuum.
37. The method of claim 35, wherein the reduced power mode includes turning off a sweeper.
38. The method of claim 29, wherein the indications are used to select the next region to clean.
39. A robot cleaner comprising:
 - a cleaning unit on the robot cleaner;
 - a battery powering the cleaning unit; and
 - a processor adapted to store indications of cleaned regions within a room, the processor adapted to automatically put the cleaning unit in a reduced power mode when the robot cleaner is at one of the cleaned regions to reduce battery power consumption.
40. The robot cleaner of claim 39, wherein the indications of the cleaned regions are stored in an internal map.
41. The robot cleaner of claim 40, wherein the internal map includes cells.

42. The robot cleaner of claim 41, wherein the cells are marked as obstacle, cleaned or uncleaned.
43. The robot cleaner of claim 40, wherein the robot cleaner has a first internal map and wherein the first internal map is used to produce a second internal map of lower resolution.
44. The robot cleaner of claim 43, wherein the first internal map is a subgrid map and the second internal map is a room map.
45. The robot cleaner of claim 39, wherein the reduced power mode includes turning off at least a portion of the cleaning unit.
46. The robot cleaner of claim 45, wherein the reduced power mode includes turning off a vacuum.
47. The robot cleaner of claim 45, wherein the reduced power mode includes turning off a sweeper.
48. The robot cleaner of claim 39, wherein the indications are used to select the next region to clean.